

Integrated Water Quality and Aquatic Communities Protocol – Wadeable Streams

Standard Operating Procedure (SOP) #14: Riparian, Invasive Plants, and Dominant Tree Characterization

Draft Version 1.0

Revision History Log:

Previous Version	Revision Date	Author	Changes Made	Reason for Change	New Version

This SOP explains the procedure for characterizing dominant trees and the presence of invasive species within the riparian zone. This procedure should be consistently performed by the Riparian Habitat Specialist for the duration of the field season. A list of target species are given for both procedures; however, if the Riparian Habitat Specialist is able to accurately identify the plant as a species to a higher taxonomic level than what is presented on the list, he/she is encouraged to do so. Both components of this SOP should be completed simultaneously while moving upstream from Transect A, although the riparian plots examined for each is different.

Riparian “Dominant” Tree Characterization

This procedure contributes to the assessment of “old growth” (or simply the largest local tree) characteristics of riparian vegetation and aids the determination of possible historic conditions and the potential for riparian tree growth. Note that only one tree is identified for the distance between each transect. At Transect K, the area upstream of Transect K a distance of four times the wetted width (the inter-transect distance) should be assessed. Record the type of tree, and, if possible, the taxonomic group. Record this information, along with the laser-measured height, approximate diameter at breast height (dbh), and distance from the wetted margin of the stream on the data form. Visual estimation of these parameters from the stream bank may be difficult to ascertain due to understory and ground cover vegetation blocking line-of-site. If necessary, travel into the riparian zone towards (or possibly away from) the dominant tree until an adequate estimation can be made from an unobstructed position.

1. Beginning at Transect A, looking upstream. Search both sides of the stream upstream to the next transect. Locate the largest riparian tree visible within 50 m (or as far as you can see, if less) from the wetted bank on both sides of the stream.
2. Classify this tree as deciduous, coniferous, or broadleaf evergreen (classify western larch as coniferous). Identify, if possible, the species or the taxonomic group of this tree from the following list:
 - a. Acacia/Mesquite

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- b. Alder/Birch
 - c. Ash
 - d. Maple/Boxelder
 - e. Oak
 - f. Poplar/Cottonwood
 - g. Sycamore
 - h. Willow
 - i. Unknown or Other Deciduous
 - j. Cedar/Cypress/Sequoia
 - k. Fir (including Douglas Fir, Hemlock)
 - l. Juniper
 - m. Pine
 - n. Spruce
 - o. Unknown or Other Conifer
 - p. Unknown or Other Broadleaf Evergreen
 - q. Snag (Dead Tree of Any Species)
 - i. If the largest tree is visibly determined to be dead, enter “Snag” as the taxonomic group, regardless of whether or not the species of the dead tree can be identified.
3. Estimate the height of the dominant tree using the laser rangefinder (TruPulse 200B).
- a. Turn the rangefinder on, by pushing the “Fire” button (Figure 1).

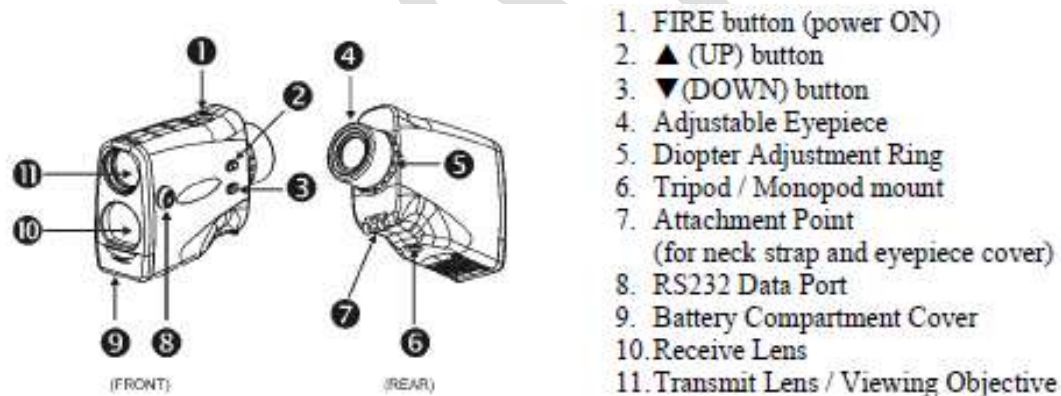


Figure 1. TruPulse 200B laser rangefinder functions.

- b. Ensure that the unit is in Height Measurement Mode (flashing “HD” and solid HT displayed in viewfinder [Figure 2]).

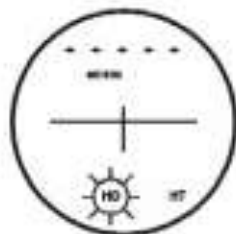


Figure 2. Height measurement mode.

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- c. If not, scroll through the settings with either button 2 or 3 (Figure 1).
- d. Start by measuring the horizontal distance to the largest tree in the inter-transect area. Do this by pressing and holding the “Fire” button.
- e. The horizontal distance will briefly flash on the top of the viewer. In most cases, this will be the distance to the tree. **Record this in the proper place.**
- f. The viewfinder will then request for the first angle (this can be the top or the bottom of the tree) (Figure 3).

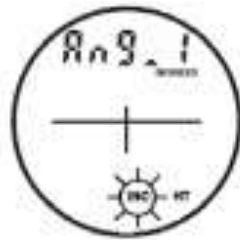


Figure 3. Viewfinder requesting the first angle.

- g. Aiming at the top or bottom, press and hold the “Fire” button. The current angle will be display. When you are as close to the top or bottom as you can be, release the “Fire” Button; this locks in the measured angle.
- h. The unit will now be ready for the second angle (the one you didn’t measure above) (Figure 4).

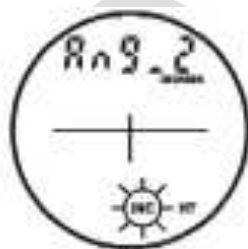


Figure 4. Viewfinder requesting the second angle.

- i. Repeat step g, by pressing and holding the “Fire” button while aiming at the base or top.
- j. Upon release after measuring the second angle, the calculated height will be displayed (Figure 5). **Record this as the height.**

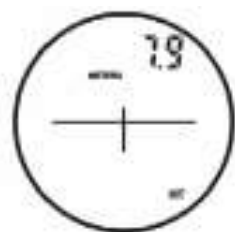


Figure 5. Viewfinder displaying calculated height.

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- k. If you are unable to get a clear line of sight to either the top or bottom of the dominant tree in a reasonable amount of time (1-2 minutes of scrambling), shoot to the highest point possible and add a > sign to indicate that this is a minimum measurement of tree height. Although an absolute height is the preferred measure, logistical constraints prevent more than a couple minutes spent trying to see a clear view of the top and bottom.
4. Estimate and record the diameter of the dominant tree at breast height (dbh).
5. Estimate and record the distance of the dominant tree from the wetted margin of the stream. (This may be done with the laser rangefinder, if the height is measured from within the stream channel.)
6. Repeat steps 1 through 5 for each remaining transect (B through K). At transect “K,” look upstream a distance of four channel widths (the inter-transect distance) when locating the dominant tree.

Invasive Plants

A trend of increasing concern along streams in many parts of the western U.S. is the invasion of alien (non-native) tree, shrub, and grass species. A list of “target” invasive species has been prepared for California and Oregon by the EPA EMAP program and is summarized in Table 1. Note that this is not a list from the KLMN Invasive Species Early Detection monitoring but rather a targeted list of species potentially occurring in riparian zones.

At each transect, the presence of listed invasive plant species within the 10 m x 10 m riparian plots on either bank is recorded on the Riparian “Dominant” Trees and Invasive Plants field form. Note that the list of target plants varies from state to state. See Appendix H for identification keys for these target plants.

1. Beginning at Transect A, examine the 10 m x 10 m riparian plots on both banks for the presence of alien plant species. The riparian plot is centered at the cross-section transect extending 5 m upstream, 5 m downstream, and 10 m from the wetted bank into the riparian area (this riparian plot is the same dimensions as the “visual riparian assessment” plot from SOP #12: Stream Habitat Characterization; Figure 5).
2. Record the presence of any species listed within the plot on either the left or right bank by marking the appropriate box(es) on the right hand column of the Riparian “Dominant” Trees and Invasive Alien Plants field form. If none of the species listed is present in either of the plots at a given transect, check the box labeled “None” for this transect.

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Table 1. Targeted invasive species for stream crews.

Common Name	Genus species	Name on form/database
Canada Thistle	<i>Cirsium arvense</i>	Can This
Giant Reed	<i>Arundo donax</i>	G Reed
Himalayan Blackberry	<i>Rubus discolor</i>	H Black
Musk Thistle	<i>Carduus nutans</i>	M This
English Ivy	<i>Hedera helix</i>	Eng Ivy
Reed Canarygrass	<i>Phalaris arundinacea</i>	RC Grass
Russian Olive	<i>Elaeagnus angustifolia</i>	Rus Ol
Salt Cedar	<i>Tamarix spp.</i>	Salt Ced
Cheatgrass	<i>Bromus tectorum</i>	Ch Grass
Teasel	<i>Dipsacus fullonum</i>	Teasel
Common Burdock	<i>Arctium minus</i>	C Burd